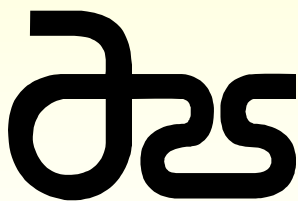




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**Alan  
Franzluebbers**  
Ecologist

## Soil Conservation



*Recent Trends in Conservation Agriculture under Mediterranean Conditions*

CIHEAM



Centre International de Hautes Études Agronomiques Méditerranéennes  
International Centre for Advanced Mediterranean Agronomic Studies

# Soil Conservation

## Threats to soil

- ✓ Natural
- ✓ Human-induced



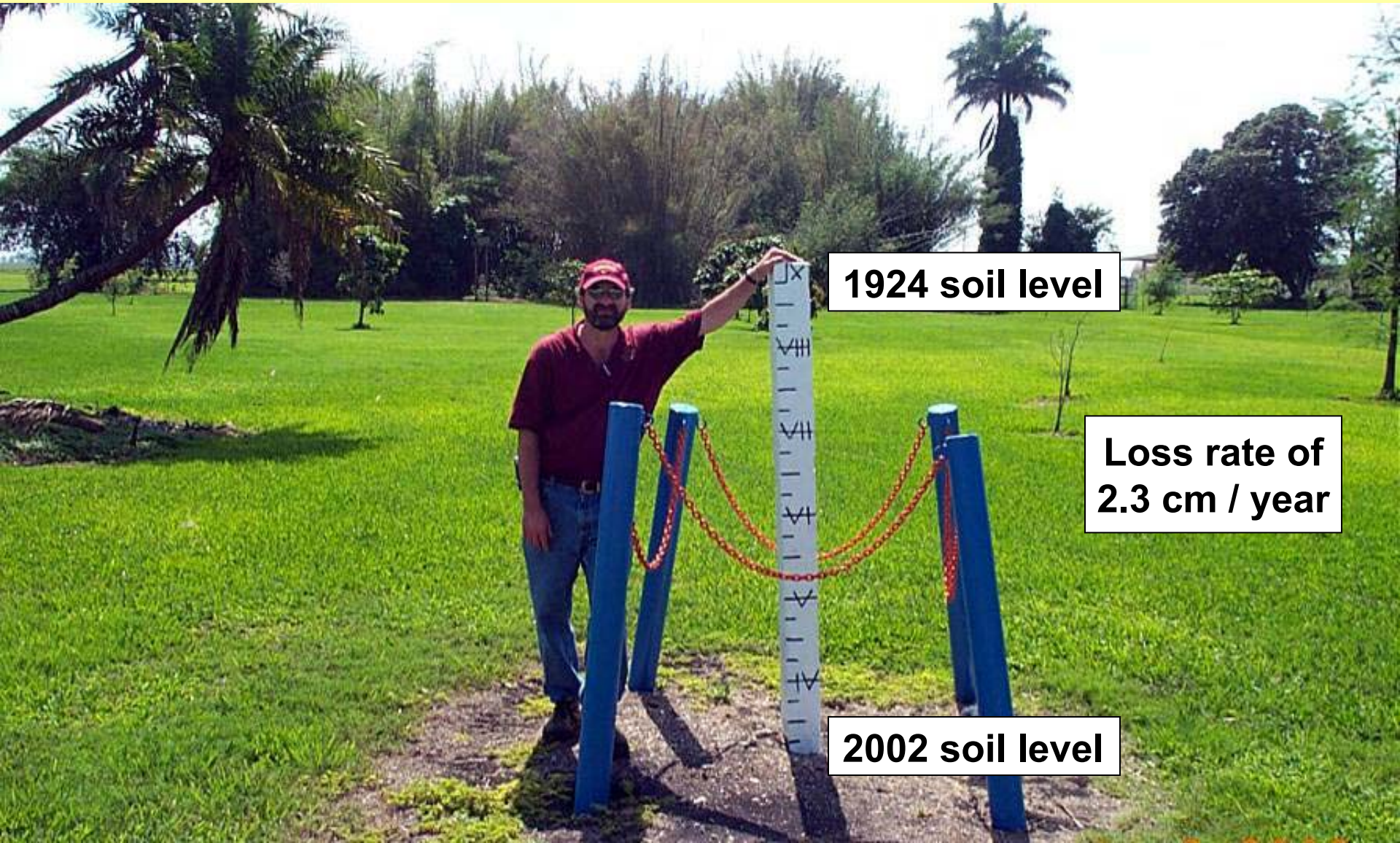
Dust Bowl of 1930s





# Soil Conservation

## Threats to soil – Subsidence



1924 soil level

Loss rate of  
2.3 cm / year

2002 soil level



# Soil Conservation

## Threats to soil – Compaction



<http://www.noble.org/Ag/Soils/SoilCompaction/SoilCompactionWetField.jpg>



<http://ianrpubs.unl.edu/soil/graphics/soil1a.jpg>

# Soil Conservation

## Threats to soil – Salinization

USDA-NRCS

Conservation practice: Planting of salt-tolerant vegetation for wildlife habitat



fotos/hg\_versalzung2.jpg

# Soil Conservation

## Threats to soil – Pollution



[www.okinternational.org/projects.html](http://www.okinternational.org/projects.html)



<http://www.emse.fr/en/transfert/spin/images/Figure8.jpg>



# Soil Conservation

## Threats to soil – Wind erosion



# Soil Conservation

## Threats to soil – Water erosion



<http://piru.alexandria.ucsb.edu/collections/geosystems>



USDA-NRCS



[www.alaskaswcds.org/ Palmer/buftypes.html](http://www.alaskaswcds.org/Palmer/buftypes.html)



# Soil Conservation

## Threats to soil – Water erosion

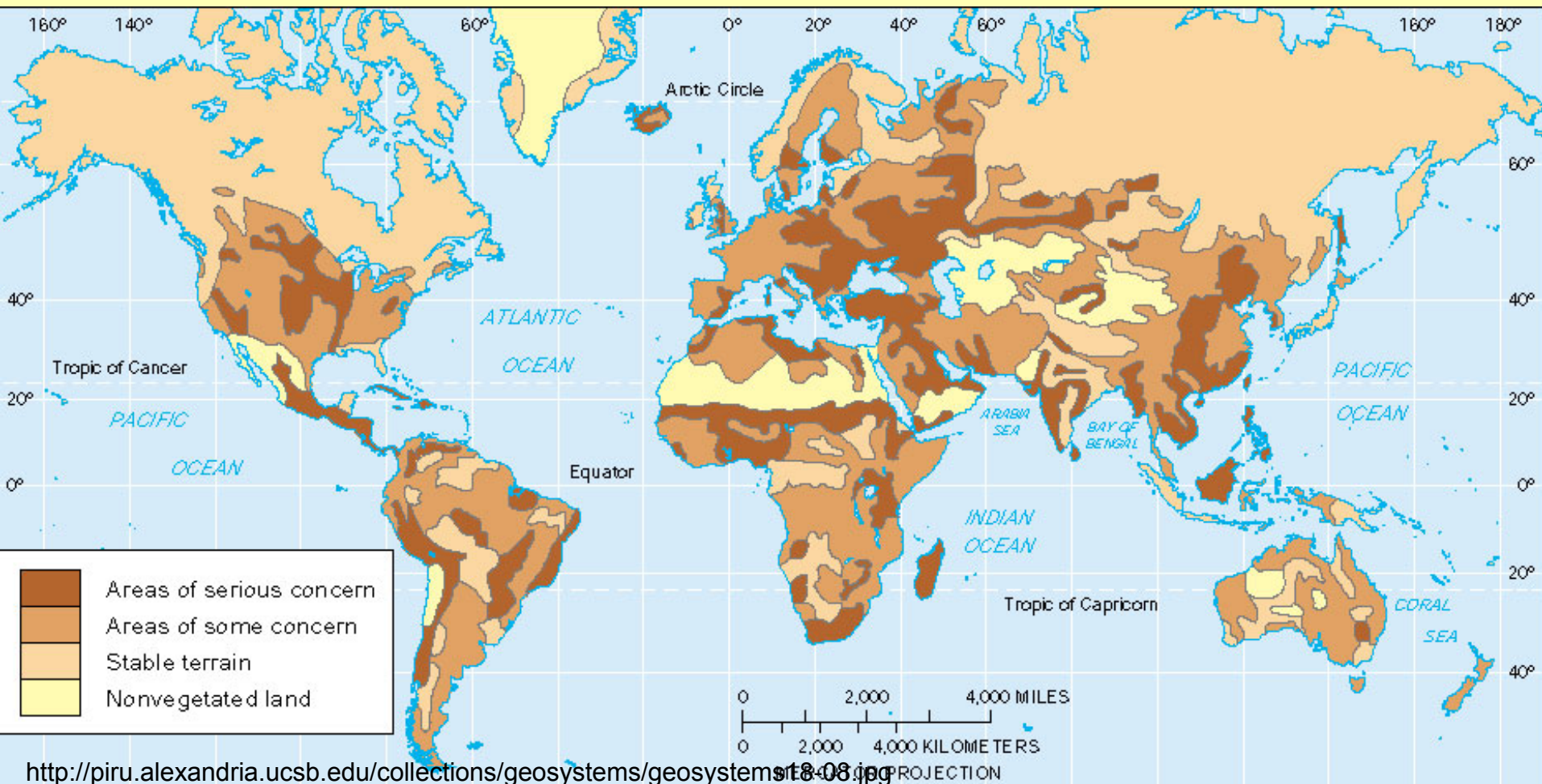


[pasture.ecn.purdue.edu/~abe325/present/sld024.htm](http://pasture.ecn.purdue.edu/~abe325/present/sld024.htm)

[pasture.ecn.purdue.edu/~abe325/present/sld024.htm](http://pasture.ecn.purdue.edu/~abe325/present/sld024.htm)

# Soil Conservation

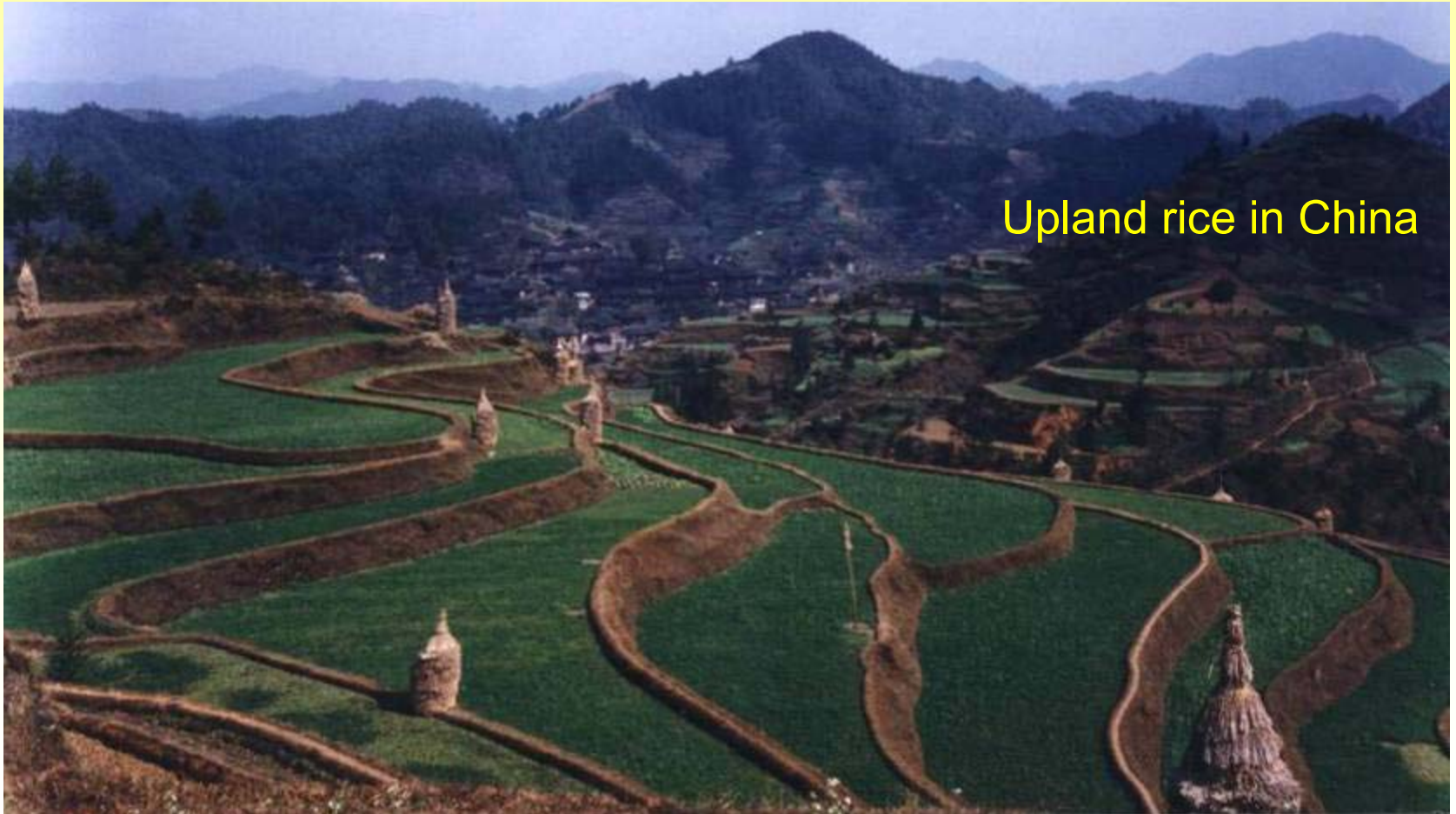
Where is soil erosion a concern?





# Soil Conservation

## Terracing



# Soil Conservation

## Contour strip cropping



**Contour buffer strips**





# Soil Conservation

## Grass waterways



<http://www.wi.nrcs.usda.gov/programs/images/grasswaterway.jpg>

# Soil Conservation

## Upland dams



<http://www.wi.nrcs.usda.gov/programs/solutions/waterbasin.html>



[www.mapleviewfarm.com/pages/farmopsnarative.html](http://www.mapleviewfarm.com/pages/farmopsnarative.html)



# Soil Conservation

## Conservation tillage





# Soil Conservation

## Cover cropping



[www.agroecology.org/cases/rbcovercrop.htm](http://www.agroecology.org/cases/rbcovercrop.htm)

[www.alaskaswcds.org/Palmer/buftypes.html](http://www.alaskaswcds.org/Palmer/buftypes.html)



# Soil Conservation

Converting land to pasture



# Soil Conservation

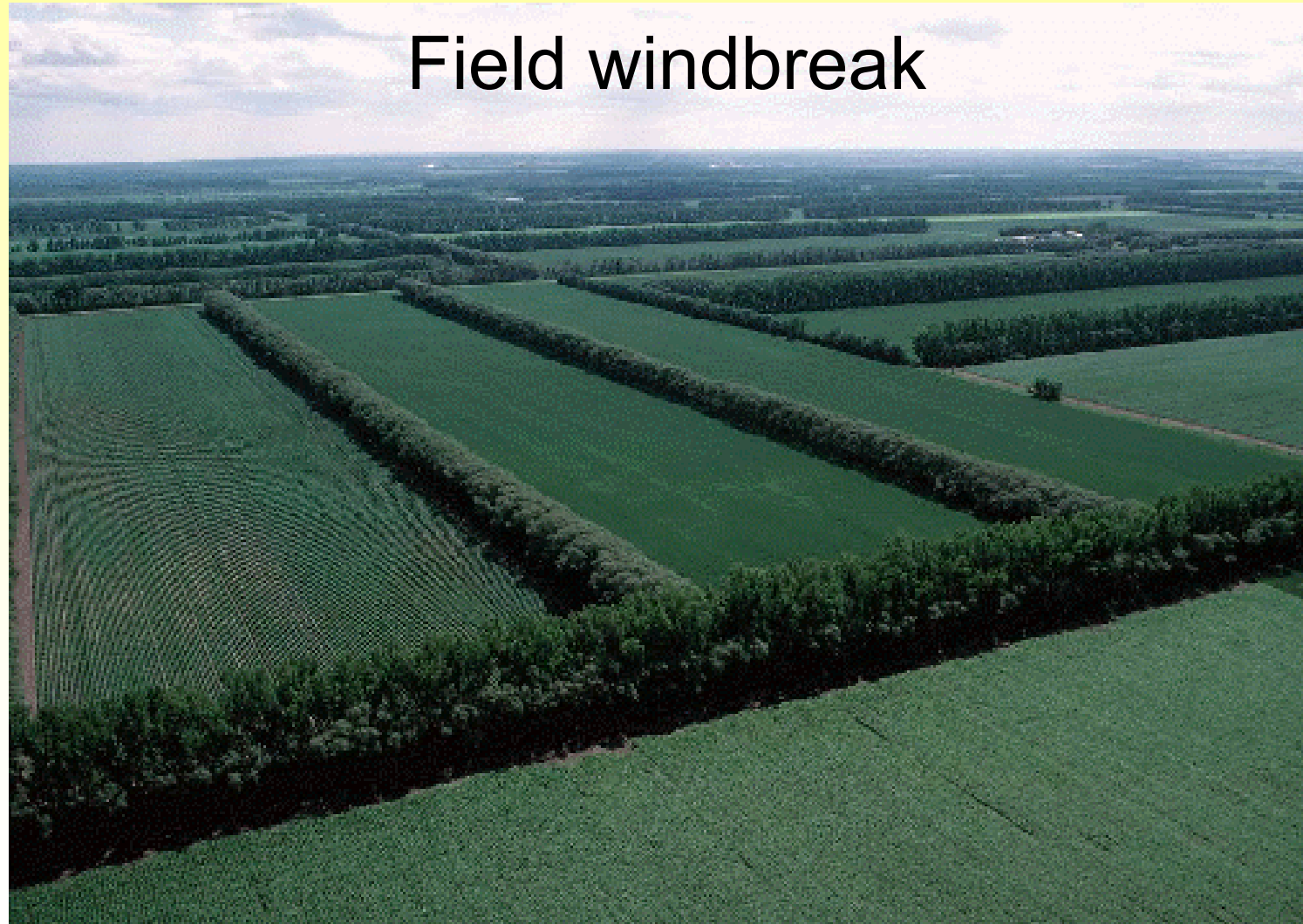
## Planting trees





# Soil Conservation

## Field windbreaks



# Soil Conservation

## Support in America



[http://www.eecis.udel.edu/~davis/stamps/plateblocks/preview/by\\_name/soil\\_conserva59\\_prev.gif](http://www.eecis.udel.edu/~davis/stamps/plateblocks/preview/by_name/soil_conserva59_prev.gif)





# Soil Conservation

Support throughout the world



Agriculture and Consumer  
Protection Department  
Conservation Agriculture



Land and Water  
development division





# Soil Conservation

## Research in Watkinsville GA





# Soil Conservation

## Research in Watkinsville GA



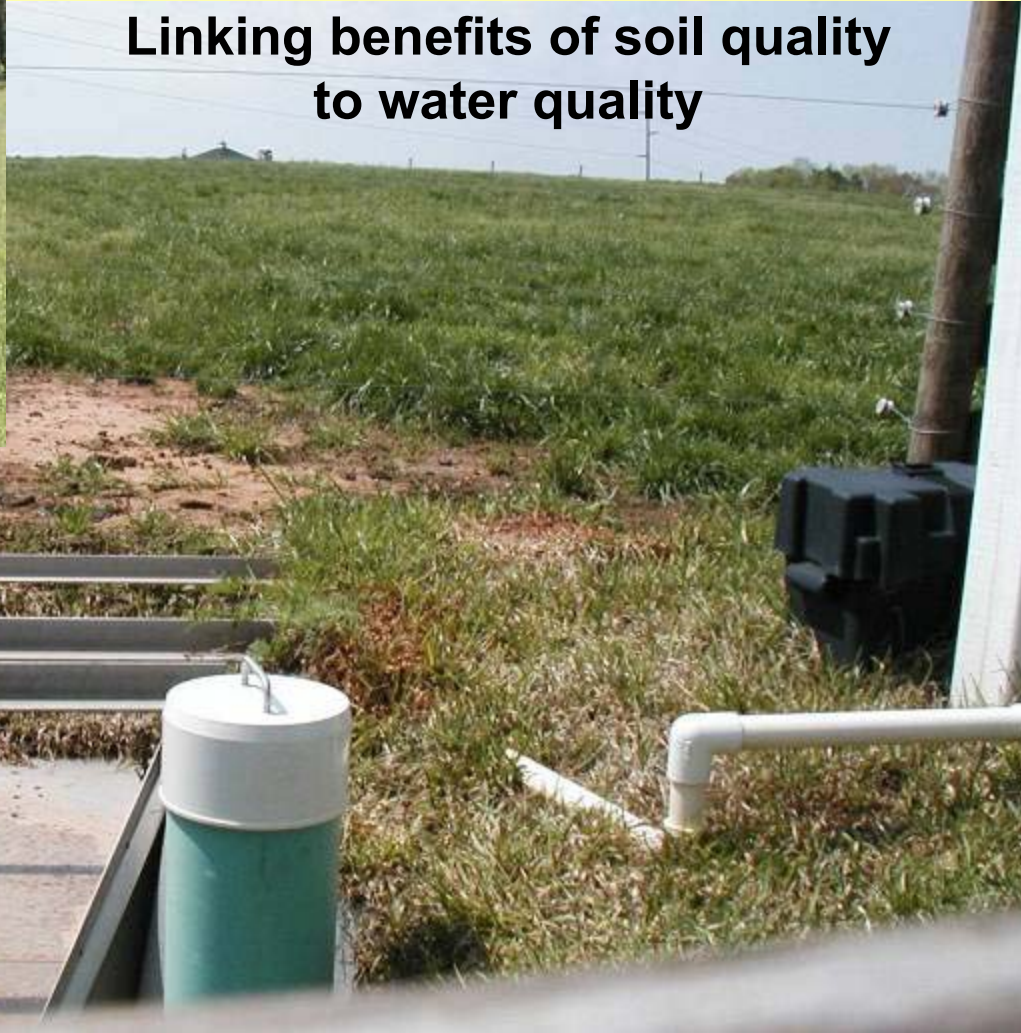
Improving natural resource efficiency by  
rotating crops with cattle pasture

# Soil Conservation

## Research in Watkinsville GA



Linking benefits of soil quality  
to water quality





# Soil Conservation

## Research in Watkinsville GA



Maximizing carbon storage in soil  
to reduce CO<sub>2</sub> in the atmosphere  
and the threat of global warming

# Soil Conservation

## Summary

**Soil erosion** is a concern all around the world. It occurs slowly with time and eventually threatens the sustainability of agriculture.

**Soil conservation practices** are available to control soil erosion:

- ✓ Terraces
- ✓ Strip cropping
- ✓ Grass waterways
- ✓ Conservation tillage
- ✓ Cover cropping
- ✓ Sod-based crop rotations
- ✓ Planting of trees

